

number of days between any two dates would be improved by a grouping of the rows. Subsequent chapters deal with compound interest, various kinds of discount, bills of exchange, shares, mixtures, and with examples involving general tables of weights and measures, English and French. Collected answers are given at the end, and altogether the book is very cleverly written, and seems eminently suited for use on the commercial side of the numerous technical and secondary schools of the country.

(5) This book is practically the authors' "Junior Arithmetic," with the chapters on the first four rules replaced by sets of examples for revision. It is intended for the middle and lower forms of secondary schools, and is specially adapted to the requirements of the Oxford, Cambridge, and Scotch local examinations and the like. The explanations of the rules are condensed, and the book contains a very large collection of examples, and is printed both with and without answers.

(6) The volume by Mr. Borchardt is based on the author's "Arithmetical Types and Examples," but with many additions; the explanations and statements of the rules are left entirely to the teacher, the sets of examples being well chosen and carefully grouped. The book is suitable for use under conditions similar to those stated under No. 5.

(7) Clive's "New Shilling Arithmetic" is mainly a collection of exercises and problems, with such statements and definitions of rules as a pupil might profitably commit to memory. It covers largely the same ground as the two previous books, all three having been much influenced by the recent reforms in mathematical teaching. The book can be had with answers at a small extra cost.

(8) The "Junior Practical Mathematics" is intended for use in preparatory and public elementary schools and in the lower forms of secondary schools. The book is divided into two parts, which may be obtained either separately or together, and with or without answers. Part i. is mainly arithmetical, but the numerical work is supplemented throughout by algebraical and graphical work. This part contains, amongst other things, the four simple rules, practice, brackets, areas, volumes and weights, graphs, fractions, indices, logarithms, proportion, percentages, interest, approximations, and contracted methods. Part ii., which is chiefly geometrical, includes elementary plane geometry, orthographic projection and descriptive geometry, and some mensuration. In both parts the sequence is unusual, and seems somewhat erratic. The book is well supplied with a good variety of examples and exercises.

(9) The preface to this suggestive book is written by Mrs. Boole, who is the originator of the method described in its pages, a system which well deserves the sympathetic consideration of educational reformers. The leading idea is, working on untutored minds, to find "a means of introducing little children to the conception of a connection between organic thought-sequence and the evolution of harmonious form." The means employed is simple embroidery in coloured threads; by following some simple rule

"a graceful curve such as he has perhaps never before seen or imagined, grows up under his hands, as if by miracle." One such is the curve of pursuit. The method has been successfully carried out by Mrs. Somervell and others, and has developed into a system of geometrical design which Mrs. Boole unhesitatingly believes "is a working possibility as a means of truly national evocation of creative and organising power." In order to encourage the spread of the system sets of curve-sewing apparatus have been designed, and can be procured at a moderate cost.

#### THE ZOOLOGIST AND SPORTSMAN IN BRITISH COLUMBIA.

*Camp-fires in the Canadian Rockies.* By Dr. William T. Hornaday. Pp. xvii+353; illustrated. (London: T. Werner Laurie, 1906.) Price 16s. net.

MOST sporting books leave the distasteful impression that the hunter's main interest in wild animals is that they are something to kill—the bigger the better. But this book shows us a hunter who, though ardent in the chase and glowing with its barbaric excitement and triumphs, has yet a conscience in his slaying, and can, on occasion, find as keen pleasure in stalking without intent to kill, but only to observe and picture. So that while the sporting man will find in the book a sufficient spice of hunting incident and success to stir the savage emotion, the less bloodthirsty reader also will find satisfaction in the moderation of this hunter and in his vivid presentment of the wild life of mountain and forest.

The book is the record of a recreative holiday trip made in the autumn of 1905 by Dr. Hornaday, the Director of the New York Zoological Park, under the guidance of his friend Mr. Phillips, Pennsylvania State Game Commissioner, to a hunter's paradise hidden away among the mountains of the south-eastern part of British Columbia, where, actually, on the first day of their coming, a band of mountain-goats stampeded through their very camp, almost upsetting the cook at his work!

Here, and at a later camp, with the tangled forests below them and the stony peaks above, they spent their thirty days in great content, readily securing the few picked specimens of mountain-goat and sheep for which they had come; having also the additional luck to add a grizzly bear apiece to their trophies; and thereafter enjoying splendid though somewhat hazardous sport in striving, with success, to "break record" in photographing their live game at close and still closer quarters among the precipices. Of these days in the "home of the mountain-goat" two only were given to hunting goats to shoot them.

"We saw two hundred and thirty-nine individuals. . . . It was because we shot little that we saw much."

Here is a charming picture of the kind of thing they saw:—

"Rising into view out of a little depression on the farther side of the meadow, lazily sauntering along, there came ten big, snow-white billy goats! . .

The air was clear; the sun was shining brightly, the meadow was like dark olive-brown plush,—and how grandly those big pure-white creatures did loom up!

For more than an hour we lay flat on our pinnacle, and watched those goats. . . . They were more than deliberate; they were almost stagnant. . . . They were already so well fed that they merely minced at the green things around them. . . . Each one seemed steeped and sodden in laziness. When out grazing, our giant tortoises move faster than they did on that lazy afternoon. When the leader of this band of weary Willies reached the geographical centre of the sky-meadow, about two hundred yards from us, he decided to take a sun-bath, on the most luxurious basis possible to him. Slowly he focussed his mind upon a level bench of earth, about four feet wide. It contained an old goat-bed, of loose earth, and upon this he lay down, with his back uphill. . . . Five minutes later, a little higher up the slope, another goat did the same thing; and eventually two or three others laid down. One, however, deliberately sat down on his haunches, dog-fashion, with his back uphill. For fully a quarter of an hour he sat there in profile, slowly turning his head from side to side, and gazing at the scenery while the wind blew through his whiskers" (pp. 82-4).

Mr. Phillips's photographs of the mountain-goat at close quarters, obtained at such desperate hazard, are admirable; but, after all, he cannot give us that touch of mountain breeze through the lazy Billy's whiskers! And what a pity that such a restful holiday-picture should be spoilt by the crack of a rifle!

Dr. Hornaday's first care in this volume is for the mountain-goat (he scorns the term "antelope-goat" as being affected and incorrect), and next for the mountain sheep and the grizzly bear; but he finds room also for the small neighbours of the big game—the wolverine, pine marten, coyote, pika, ground-squirrel, pack-rat, and others—all depicted with the same sympathetic and vivid touch, and generally with authoritative notes upon their geographic range and novel observations on their habits; and the birds of the region, too, receive a share of his careful notice.

The author deplores the practical extinction of wild life in the Western States, and calls upon the Canadian authorities to do what his own Government has failed to do—stringently to preserve the remnants. He considers that the British Columbian game laws err in being too liberal in every particular, and pleads for the absolute protection of all female game animals and for a reduction of the number of head allowed under each shooting license. Even the grizzly bear should, in his opinion, be protected; and he thinks that, with proper care, the Canadian Rockies might continue almost indefinitely to be the Delectable Mountains of the vigorous sportsman. The attempts that are being made toward this end should be of interest to the student of sociology, who may here watch the development of game laws anew in a democratic community.

To the splendid photographs with which the book is illustrated, and to the sensational circumstances in which some of them were obtained, we have already referred. Both astonishing and amusing is the account given by Mr. Phillips of how, during one of these

operations, while on a dangerous rock-ledge from which he could not retreat, he was charged by an angry goat:—

"There was really nothing that I could do except to hold the [stereoscopic] camera at him and snap it. He charged up to within a yard of me, but with his eyes fixed on the two lenses. Then he appeared to conclude that any animal that could stand that much without winking was too much for him, so shaking his head and gritting his teeth he stopped, and to my great relief slowly backed into his niche" (p. 190).

No wonder that the resultant photograph is a "record"!

That the trip was one that any zoologist must have enjoyed goes without saying, and we thank Dr. Hornaday heartily for this delightfully-written record of his own pleasure in it. Indeed, perhaps the chief charm of the book is that he manages so faithfully to convey a sense of the recrudescence of boyish energy and spirits in staid middle-life, aroused under the stimulus of unusual and invigorating surroundings; for is not the enthusiasm of middle-life more contagious than that of youth itself? So let us all echo, for him, his own farewell wish:—

"May heaven keep my memory of it all as fresh as the breezes that blow on Goat Pass, as green as the pines and spruces that clothe the lower slopes of those delectable mountains"! G. W. L.

#### A BOOK ON CLAYS.

*Clays, their Occurrence, Properties, and Uses, with Especial Reference to those of the United States.* By Dr. Heinrich Ries. Pp. xvi+490. Illustrated. (New York: Wiley and Sons; London: Chapman and Hall, Ltd., 1906.) Price 21s. net.

"DOUBTLESS few people realise the importance of the clay-working industry in the United States, and yet this is not so surprising since clay has less popular attraction than many other mineral products, such as gold, silver, &c. A casual glance, however, at the annual figures of production will probably speedily convince one that clay is to be classed among the foremost products of the country, being outranked only by coal and iron."

In 1904 the value of the clay products of the United States was 26,204,650*l.*, while the raw clay, mined and sold within the States, amounted to 464,030*l.* Not so long ago America was more backward than Europe in the attention she paid to her clay resources. This has now been changed. In recent years we have witnessed the growth of a goodly crop of literature upon this subject in the United States, both in official publications and in occasional papers. The crop has been a heavy one in more senses than one, and bulky withal, and few there are, even in America, whose shelves could afford it space. It should be therefore a matter for congratulation to all American clay-workers that for the sum of five dollars they may now obtain in convenient form—the selected fruit—that which they had already received gratis in great volume. Although the possessors of the numerous